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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/054,706

01/24/2002

Farrokh Alemi

GMU-22U

5413

28598 7590 03/19/2007  
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EXAMINER

GOTTSCHALK, MARTIN A

ART UNIT

PAPER NUMBER

3694

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/19/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/054,706

Applicant(s)

ALEMI, ET AL.

Examiner

Martin A. Gottschalk

Art Unit

3694

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Notice to Applicant*

1. Claims 1-8 are pending and remain unamended.

### *Specification*

2. The amendment to the specification to reduce the length of the abstract to 150 words or less is hereby acknowledged. The objection is withdrawn.

### *Claim Rejections - 35 USC § 112*

3. Applicant has pointed to passages in the specification which provide support for the claimed material which was the basis for this rejection. The rejection is thus hereby withdrawn.

**Note:** The claims are unamended and the rejections from the previous Office Action are reproduced here for the convenience of the reader only:

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### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 3694

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seare et al (US Pat# 5,557,514, hereinafter Seare) in view of Ziegele (PG Pub# US 2005/0125257, hereinafter Ziegele), and further in view of Lockwood (US Pat# 5,706,441, hereinafter Lockwood).

A. As per claim 1, Seare discloses an episode classification system including:

a. a multitude of diagnosis records (Seare: col 21, lns 10-19), each of said diagnosis records including:

i. diagnoses information (Seare: col 22, lns 14-27, e.g. "claim ID");

ii. time of diagnoses information (Seare: col 22, lns 14-27, e.g. "claim ID");

Art Unit: 3694

and

iii. patient information (Seare: col 22, lns 14-27);

b. a patient grouper for generating at least one patient group, each patient group generated by grouping patient records having similar patient information (Seare: Seare: col 24, lns 18-21, i.e. sorting by "index code");

c. a diagnosis grouper for generating at least one diagnosis group from a patient group, each diagnosis group generated by grouping patient records from a patient group that have similar diagnosis information (Seare: col 24, lns 21-26, i.e. sorting on "qualifying ICD codes");

d. an episode analyzer including:

ii. a episode grouper for grouping diagnosis records determined to belong to a single episode (Seare: Figs 2-5, and 12; col 23, section titled "Determination of Episode of Care").

Seare fails to disclose item d-i, however this feature is disclosed by Ziegele, who teaches

Art Unit: 3694

i. a probability analyzer for performing probability calculations, each of said probability calculations capable of generating a probability value using at least two of said multitude of diagnosis records as input entries, said probability value representing the probability that said input entries belong to a single episode (Ziegele: Fig 1; [0014] - [0016]);

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Ziegele into the system of Seare with the motivation of maintaining updated relationships between diagnostic information records and actual and potential treatment modalities relevant to the diagnosis (Ziegele: [0010]).

Seare further fails to disclose item d-iii, however this feature is disclosed by Lockwood, who teaches

iii. a severity analyzer for performing episode severity calculations, each of said episode severity calculations capable of generating an episode severity value (Lockwood: col 4, lns 46-61).

It would have been obvious at the time of the invention to one of ordinary skill in the art to incorporate the teachings of Lockwood into the system taught by Seare with the motivation of accurately differentiating levels of case complexity

Art Unit: 3694

handled by different categories of healthcare providers (Lockwood: col 3, lns 43-53).

In subsequent claims combining the teachings of Seare, Lockwood, and Ziegele, the same motivation is applied as above, will not be repeated, and is incorporated therein.

B. As per claims 2-4, Seare discloses an episode classification system according to claim 1 wherein at least one of said diagnosis records is

(claim 2) an anchor diagnosis record (Seare: col 22, lns 49-52, reads on "date of service from");

(claim 3) a trigger diagnosis record (Seare col 8, ln 50 to col 9, ln 47, note the triggering effect of the Index table which the Examiner considers to be a type of trigger diagnosis record);

(claim 4) stopping point diagnosis record (Seare: col 22, lns 49-52, reads on "date of service to").

C. As per claim 5, episode classification system according to claim 1 wherein said

Art Unit: 3694

calculation:

b. is a function of:

i. a similarity value, said similarity value representing the similarity between said pair of diagnostic records (Seare: e.g. an index code represents a similarity value, col 7, lns 35-64);

and

ii. a time between diagnosis value, said time between diagnosis value representing the time between said pair of diagnostic records (Seare: col 24, ln 60 to col 25 ln 26).

Seare discloses operating on one or more records but fails to disclose operating specifically on a pair of records. However this feature is well known in the art as evidenced by the teachings of Ziegele who teaches a probability calculation which

a. operates on a pair of diagnosis records (Ziegele: [0079]-[0080]).

D. As per claim 6, Seare teaches the similarity value as per the previous claim, but fails to explicitly disclose the rest of the claim, however these features



Art Unit: 3694

are taught by Ziegele who teaches the episode classification system according to claim 5 wherein said probability calculation includes

a probability numerator divided by a probability denominator said probability numerator set to said similarity value times a first constant and said probability denominator set to the quantity of a second constant times said time between diagnosis value plus one (Ziegele: [0032], i.e. the constants both equal 1. The Examiner notes that probability calculation is old and, applying a variety of well-developed equations.).

E. As per claim 7, Seare discloses a method for episode classification using a multitude of diagnosis records (Seare: col 21, lns 10-19), each of said multitude of diagnosis records including: diagnosis information; time of diagnoses information; and patient information (Seare: col 22, lns 8-27); including the steps of:

a. creating at least one diagnosis pair from said multitude of diagnosis records, each said diagnosis pair containing a unique combination of two diagnoses information (Seare: col 24, lns 18-21, i.e. index codes contain at least one pair of diagnoses information.);

b. for each said diagnosis pair, iteratively:

Art Unit: 3694

i. determining a co-occurrence value, said co-occurrence value being the number of unique patients for whom the two diagnoses contained in each of said diagnosis pairs occurred within a co-occurrence window;

and

ii. associating said co-occurrence value with each diagnosis information contained in said diagnosis pair (Seare: col 27, lns 15-27);

c. creating at least one patient group, each said patient group generated by grouping said diagnosis records having similar said patient information (Seare: col 24, lns 21-26, i.e. sorting patients by "qualifying ICD code" produces a patient group.);

and

d. for each said patient group, iteratively:

i. creating at least one diagnosis group, each said diagnosis group generated by grouping said diagnosis records having similar said diagnosis information (Seare: col 24, lns 26-33, i.e., patients

Art Unit: 3694

grouped by undertaking "procedures related to a specific medical condition");

ii. for each said diagnosis group, iteratively adding a unique occurrence identifier to said diagnosis information for each said diagnosis record (Seare: col 24, lns 38-45, reads on "staging indicator");

iii. creating at least one time between diagnosis pair from said diagnosis records in said diagnosis group, each said time between diagnosis pair containing a unique combination of two said diagnosis records (Seare: col 24, lns 60-66, time between diagnosis reads on "clear window");

iv. for each said time between diagnosis pair, iteratively:

1. setting a time between diagnosis pair value for each said diagnosis pair equal to the absolute value of the difference between said time of diagnoses information from each said diagnosis record in said diagnosis group (Seare: col 24, ln 60 to col 25, ln 26);

2. setting a score numerator equal to said co-occurrence value having the same combination of diagnosis information as said time between diagnosis pair value (Seare: col 27, lns 15-27, reads on "adjustment factor");

3. calculating a score for said diagnosis pair by dividing said score numerator by said time between diagnosis pair value (The Examiner notes that the arithmetic process of division is well known);

and

4. associating said score to said diagnosis pair (Seare: col 27, lns 15-27);

v. setting a minimum score value equal to the minimum said score from the set of said scores associated to each of said diagnosis pairs in said patient group;

vi. setting a maximum score value equal to the maximum said score from the set of said scores associated to each of said diagnosis pairs in said patient group;

Art Unit: 3694

vii. setting a difference score value equal to difference of said maximum score value and said minimum score value (for steps v-vii, see Seare: col 27, ln 44 to col 28, ln 3, i.e. maximum and minimum scores provide the limits of the recited “defined statistical criteria”; difference reads on “variance”);

viii. for each said diagnosis pair, iteratively:

1. setting a standardized score numerator value equal to said minimum score minus said score associated to said time between diagnosis pair;
2. setting a standardized score equal to said standardized score numerator divided by said difference score value; and
3. associating said standardized score to said diagnosis pair (for steps viii 1-3, the Examiner notes that the statistical procedure of standardizing scores is well known. Also see Seare: col 6, ln 15 which identifies CPT codes as “standard,” and note that the CPT and codes drive the scoring system of the reference invention.);

and

ix. classifying each said diagnosis information into at least one episode using said standardized score (Seare: col 25, lns 38-43).

F. As per claim 8, Seare discloses a method according to claim 7 wherein said step of classifying each said diagnosis information into at least one episode includes the steps of:

a. flagging each of said diagnosis information in said patient group for analysis (Seare: col 22, lns 10-12);

and

b. until all diagnosis information in said patient group is analyzed, iteratively:

i. combining two of said diagnosis information in said patient group flagged for analysis which have the maximum said standardized scores not exceeding a preset cutoff into an episode record (Seare: col 25, lns 29 - 62);

Art Unit: 3694

ii. creating a new diagnosis information, said new diagnosis information representing said diagnosis information in said episode record;

iii. calculating a new standardized score for said new diagnosis information by averaging the standardized score associated with each of said diagnosis information in said episode record (for steps b ii-iii, see Seare: col 25, ln 65 to col 26, ln 6);

and

iv. de-flagging said diagnosis information in said episode record for further analysis (Seare: col 26, 12-13).

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***Response to Arguments***

7. Applicant's arguments in the response filed 12/08/2006 have been fully considered but they are not persuasive.

A. On page 5 of the response, Applicant argues that the applied reference Ziegele calculates a "different type of probability" than that in sub-claim 1(d)(i). In response, the Examiner notes that it is the combination of teachings of the Seare, Ziegele, and Lockwood references that teach the entire claim. The Seare reference in the cited passage teaches rigorously defining an episode, whereas Ziegele teaches probability analysis wherein the probability of information being

Art Unit: 3694

associated with diagnosis is determined. The combination of references would teach probabilistically associating diagnosis information with episode information.

B. On page 6 of the response, Applicant argues there was not a proper motivation to incorporate the teachings of Ziegele into the system of Seare, apparently because the cited motivation to combine the references does not teach the feature of the claim. In response, it should be noted that the fact that Applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Note further that the specific citations are provided for the features of the claim.

C. On page 7, Applicant states that there was not "one instance in Seare that discloses that diagnosis records are processed in pairs," and states that this is an important feature of the claim. In response, the Examiner respectfully points to Seare col 24, lns 38-40 and notes the patient records are searched for co-occurring diagnoses, i.e. if one diagnosis occurs, the record is searched for at least one, paired, co-occurring diagnosis. The Examiner considers this to be a type of pairwise processing of the records.

D. On page 8, Applicant argues that the cited "staging indicator" is not the same as the claimed unique occurrence identifier, because the staging indicator



Art Unit: 3694

can appear on more than one record. In response, the Examiner wishes to clarify it is the "staging indicator...associated with the index code" which is the unique identifier, and it is added to each of the records, as is claimed.

E. On page 9 Applicant the reference citation does not teach the claimed "score numerator." The Examiner wishes to clarify that it is the "adjustment factor...multiplied against the occurrence count..." which results in the score numerator (in the passage,  $0.6 \times 10 = 6$ ) which is stored. Note further there is a plurality of recited adjustment factors in the passage.

F. On page 11, Applicant argues the Examiner's assertion "that the arithmetic process of division is well known," as it is applied to claim 7. In response, the Examiner wishes to clarify that it does not appear there is reason why the two claimed quantities must necessarily be divided other than to create an empirical ratio. The process of making such a comparison is well known, and other such comparisons such as those described in Seare: col 27, section 2 are also well known - the ultimate purpose being to produce scores which can be used calculate the statistics described in the rest of claim 7 (e.g. minima and maxima to establish a range; standardized scores), the processes of which are also well known.

### ***Conclusion***

Art Unit: 3694

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin A. Gottschalk whose telephone number is (571) 272-7030. The examiner can normally be reached on Mon - Fri 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James P. Trammell can be reached on (571) 272-6712. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3694

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MG  
03/01/2007



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PRIMARY EXAMINER